



SEQUENCE LISTING

<110> Hotten, Gertrud
Neidhardt, Helge
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Pohl, Jens

<120> GROWTH/DIFFERENTIATION FACTORS OF THE TGF-B FAMILY

<130> 2923-0286

<140> 09/901,556

<141> 1999-09-24

<150> 08/289,222

<151> 1994-08-12

<150> DE P 44 23 190.3

<151> 1994-07-01

<150> EPO 92102324.8

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<150> PCT/EP93/00350

<151> 1993-02-12

<160> 53

<170> PatentIn version 3.1

<210> 1

<211> 1207

<212> DNA

<213> Homo sapiens

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gccgtttcgc ccacccccca tcacaccca cgagtacatg ctctcgctgt acaggacgct 240
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<210> 3

<211> 401

<212> PRT

<213> Homo sapiens

<400> 3

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Ala Thr Ala Arg Thr Val Thr Pro Lys Gly Gln Leu Pro Gly Gly Lys
 20 25 30

Ala Pro Pro Lys Ala Gly Ser Val Pro Ser Ser Phe Leu Leu Lys Lys
 35 40 45

Ala Arg Glu Pro Gly Pro Pro Arg Glu Pro Lys Glu Pro Phe Arg Pro
 50 55 60

Pro Pro Ile Thr Pro His Glu Tyr Met Leu Ser Leu Tyr Arg Thr Leu
 65 70 75 80

Ser Asp Ala Asp Arg Lys Gly Gly Asn Ser Ser Val Lys Leu Glu Ala
 85 90 95

Gly Leu Ala Asn Thr Ile Thr Ser Phe Ile Asp Lys Gly Gln Asp Asp
 100 105 110

Arg Gly Pro Val Val Arg Lys Gln Arg Tyr Val Phe Asp Ile Ser Ala
 115 120 125

Leu Glu Lys Asp Gly Leu Leu Gly Ala Glu Leu Arg Ile Leu Arg Lys
 130 135 140

Lys Pro Ser Asp Thr Ala Lys Pro Ala Ala Pro Gly Gly Gly Arg Ala

145		150		155		160
Ala Gln Leu Lys	Leu Ser Ser Cys Pro Ser Gly Arg Gln Pro Ala Ser	165		170		175
Leu Leu Asp Val	Arg Ser Val Pro Gly Leu Asp Gly Ser Gly Trp Glu	180		185		190
Val Phe Asp Ile	Trp Lys Leu Phe Arg Asn Phe Lys Asn Ser Ala Gln	195		200		205
Leu Cys Leu Glu	Leu Glu Ala Trp Glu Arg Gly Arg Ala Val Asp Leu	210		215		220
Arg Gly Leu Gly	Phe Asp Arg Ala Ala Arg Gln Val His Glu Lys Ala	225		230		235
Leu Phe Leu Val	Phe Gly Arg Thr Lys Lys Arg Asp Leu Phe Phe Asn	245		250		255
Glu Ile Lys Ala	Arg Ser Gly Gln Asp Asp Lys Thr Val Tyr Glu Tyr	260		265		270
Leu Phe Ser Gln	Arg Arg Lys Arg Arg Ala Pro Leu Ala Thr Arg Gln	275		280		285
Gly Lys Arg Pro	Ser Lys Asn Leu Lys Ala Arg Cys Ser Arg Lys Ala	290		295		300
Leu His Val Asn	Phe Lys Asp Met Gly Trp Asp Asp Trp Ile Ile Ala	305		310		315
Pro Leu Glu Tyr	Glu Ala Phe His Cys Glu Gly Leu Cys Glu Phe Pro	325		330		335
Leu Arg Ser His	Leu Glu Pro Thr Asn His Ala Val Ile Gln Thr Leu	340		345		350
Met Asn Ser Met	Asp Pro Glu Ser Thr Pro Pro Thr Cys Cys Val Pro	355		360		365

Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp Ser Ala Asn Asn
 370 375 380

Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys Gly Cys
 385 390 395 400

Arg

<210> 4

<211> 352

<212> PRT

<213> Homo sapiens

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 20 25 30

Thr Leu Glu Leu Glu Ser Gln Arg Glu Leu Leu Leu Asp Leu Ala Lys
 35 40 45

Arg Ser Ile Leu Asp Lys Leu His Leu Thr Gln Arg Pro Thr Leu Asn
 50 55 60

Arg Pro Val Ser Arg Ala Ala Leu Arg Thr Ala Leu Gln His Leu His
 65 70 75 80

Gly Val Pro Gln Gly Ala Leu Leu Glu Asp Asn Arg Glu Gln Glu Cys
 85 90 95

Glu Ile Ile Ser Phe Ala Glu Thr Gly Leu Ser Thr Ile Asn Gln Thr
 100 105 110

Arg Leu Asp Phe His Phe Ser Ser Asp Arg Thr Ala Gly Asp Arg Glu
 115 120 125

Val Gln Gln Ala Ser Leu Met Phe Phe Val Gln Leu Pro Ser Asn Thr

130		135		140
Thr 145	Trp	Thr	Leu	Lys
				Val 150
				Arg
				Val
				Leu
				Val
				Leu 155
				Gly
				Pro
				His
				Asn
				Thr 160
Asn	Leu	Thr	Leu	Ala
				Thr 165
				Gln
				Tyr
				Leu
				Leu 170
				Glu
				Val
				Asp
				Ala
				Ser 175
Trp	His	Gln	Leu	Pro
				Leu 180
				Gly
				Pro
				Glu 185
				Ala
				Gln
				Ala
				Ala
				Cys 190
				Ser
				Gln
Gly	His	Leu	Thr	Leu
				Glu 195
				Leu
				Glu
				Val 200
				Leu
				Glu
				Gly
				Gln
				Val 205
				Ala
				Gln
				Ser
Ser	Val	Ile	Leu	Gly
				Gly 210
				Ala
				Ala 215
				His
				Arg
				Pro
				Phe
				Val 220
				Ala
				Ala
				Arg
Val	Arg	Val	Gly	Gly
				Lys 225
				His
				Gln
				Ile
				His
				Arg
				Arg 235
				Gly
				Ile
				Asp
				Cys 240
Gln	Gly	Gly	Ser	Arg
				Met 245
				Cys
				Cys
				Arg
				Gln
				Glu
				Phe
				Phe
				Val
				Asp
				Phe 255
Arg	Glu	Ile	Gly	Trp
				His 260
				Asp
				Trp
				Ile
				Ile
				Gln
				Pro
				Glu
				Gly
				Tyr
				Ala 270
Met	Asn	Phe	Cys	Ile
				Gly 275
				Gln
				Cys
				Pro
				Leu
				His
				Ile
				Ala
				Gly
				Met
				Pro 285
Gly	Ile	Ala	Ala	Ser
				Phe 290
				His
				Thr
				Ala
				Val
				Leu
				Asn
				Leu
				Leu
				Lys
				Ala 300
Asn	Thr	Ala	Ala	Gly
				Thr 305
				Thr
				Gly
				Gly
				Gly
				Ser
				Cys
				Cys
				Val
				Pro
				Thr 320
Ala	Arg	Arg	Pro	Leu
				Ser 325
				Leu
				Leu
				Tyr
				Tyr
				Asp
				Arg
				Asp
				Ser
				Asn
				Ile 335
Val	Lys	Thr	Asp	Ile
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				Gly
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 <213> Homo sapiens
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 cacagctgca ggcaccactg gagggggctc atgctgtgta cccacggccc ggcgccccct 180
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 agtagaggcc tgtgggtgca gttag 265

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 <212> DNA
 <213> Homo sapiens
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<400> 8
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<210> 9

<211> 9

<212> PRT

<213> Homo sapiens

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Met Asn Ser Met Asp Pro Glu Ser Thr
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<210> 10

<211> 10

<212> PRT

<213> Homo sapiens

<400> 10

Leu Leu Lys Ala Asn Thr Ala Ala Gly Thr
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<210> 11

<211> 44

<212> DNA

<213> artificial sequence

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<223> oligodT (16 residues) linked to adapter primer

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<211> 24

<212> DNA

<213> artificial sequence

<220>

<223> adaptor primer

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agaattcgca tgccatgggc gacg

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<210> 13

<211> 24

<212> DNA

<213> Homo sapiens

<400> 13

ggctacgccca tgaacttctg cata

24

<210> 14

<211> 24

<212> DNA

<213> Homo sapiens

<400> 14

acatagcagg catgcctggg attg

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<210> 15

<211> 23

<212> DNA

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<400> 15

cttgagtacg aggctttcca ctg

23

<210> 16

<211> 24

<212> DNA

<213> artificial sequence

<220>

<223> nested adaptor primer

<400> 16

attcgcatgc catggtcgac gaag

24

<210> 17

<211> 23

<212> DNA

<213> Homo sapiens

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ggagcccacg aatcatgcag tca

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<210> 18

<211> 23

<212> DNA

<213> Homo sapiens

<400> 18

acagcaggtg ggtggtgtgg act

23

<210> 19

<211> 20

<212> DNA

<213> Homo sapiens

<400> 19

ccagcagccc atccttctcc

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<210> 20

<211> 24

<212> DNA

<213> Homo sapiens

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tccagggcac taatgtcaaa cacg

24

<210> 21

<211> 24

<212> DNA

<213> Homo sapiens

<400> 21

actaatgtca aacacgtacc tctg

24

<210> 22

<211> 102

<212> PRT

<213> Homo sapiens

<400> 22

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Asp	Trp	Ile	Ile	Ala	Pro	Leu	Glu	Tyr	Glu	Ala	Phe	His	Cys	Glu	Gly
		20						25					30		

Leu	Cys	Glu	Phe	Pro	Leu	Arg	Ser	His	Leu	Glu	Pro	Thr	Asn	His	Ala
	35						40					45			

Val	Ile	Gln	Thr	Leu	Met	Asn	Ser	Met	Asp	Pro	Glu	Ser	Thr	Pro	Pro
	50					55					60				

Thr	Cys	Cys	Val	Pro	Thr	Arg	Leu	Ser	Pro	Ile	Ser	Ile	Leu	Phe	Ile
65					70					75					80

Asp	Ser	Ala	Asn	Asn	Val	Val	Tyr	Lys	Gln	Tyr	Glu	Asp	Met	Val	Val
			85						90					95	

Glu	Ser	Cys	Gly	Cys	Arg
			100		

<210> 23

<211> 101

<212> PRT

<213> Homo sapiens

<400> 23

Cys Lys Arg His Pro Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn
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Asp Trp Ile Val Ala Pro Pro Gly Tyr His Ala Phe Tyr Cys His Gly
20 25 30

Glu Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala
35 40 45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Lys Ile Pro Lys Ala
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp
65 70 75 80

Glu Asn Glu Lys Val Val Leu Lys Asn Tyr Gln Asp Met Val Val Glu
85 90 95

Gly Cys Gly Cys Arg
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<210> 24

<211> 101

<212> PRT

<213> Homo sapiens

<400> 24

Cys Arg Arg His Ser Leu Tyr Val Asp Phe Ser Asp Val Gly Trp Asn
1 5 10 15

Asp Trp Ile Val Ala Pro Pro Gly Tyr Gln Ala Phe Tyr Cys His Gly
20 25 30

Asp Cys Pro Phe Pro Leu Ala Asp His Leu Asn Ser Thr Asn His Ala

35

40

45

Ile Val Gln Thr Leu Val Asn Ser Val Asn Ser Ser Ile Pro Lys Ala
50 55 60

Cys Cys Val Pro Thr Glu Leu Ser Ala Ile Ser Met Leu Tyr Leu Asp
65 70 75 80

Glu Tyr Asp Lys Val Val Leu Lys Asn Tyr Gln Glu Met Val Val Glu
85 90 95

Gly Cys Gly Cys Arg
100

<210> 25

<211> 102

<212> PRT

<213> Homo sapiens

<400> 25

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Phe Tyr Cys Asp Gly
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Phe Pro Asp His Val Pro Lys
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe
65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val
85 90 95

Arg Ser Cys Gly Cys His
100

<210> 26

<211> 102

<212> PRT

<213> Homo sapiens

<400> 26

Cys Arg Lys His Glu Leu Tyr Val Ser Phe Gln Asp Leu Gly Trp Gln
1 5 10 15

Asp Trp Ile Ile Ala Pro Lys Gly Tyr Ala Ala Asn Tyr Cys Asp Gly
20 25 30

Glu Cys Ser Phe Pro Leu Asn Ala His Met Asn Ala Thr Asn His Ala
35 40 45

Ile Val Gln Thr Leu Val His Leu Met Asn Pro Glu Tyr Val Pro Lys
50 55 60

Pro Cys Cys Ala Pro Thr Lys Leu Asn Ala Ile Ser Val Leu Tyr Phe
65 70 75 80

Asp Asp Asn Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val
85 90 95

Arg Ala Cys Gly Cys His
100

<210> 27

<211> 102

<212> PRT

<213> Homo sapiens

<400> 27

Cys Lys Lys His Glu Leu Tyr Val Ser Phe Arg Asp Leu Gly Trp Gln
1 5 10 15

Asp Trp Ile Ile Ala Pro Glu Gly Tyr Ala Ala Tyr Tyr Cys Glu Gly

20

25

30

Glu Cys Ala Phe Pro Leu Asn Ser Tyr Met Asn Ala Thr Asn His Ala
 35 40 45

Ile Val Gln Thr Leu Val His Phe Ile Asn Pro Glu Thr Val Pro Lys
 50 55 60

Pro Cys Cys Ala Pro Thr Gln Leu Asn Ala Ile Ser Val Leu Tyr Phe
 65 70 75 80

Asp Asp Ser Ser Asn Val Ile Leu Lys Lys Tyr Arg Asn Met Val Val
 85 90 95

Arg Ala Cys Gly Cys His
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<210> 28

<211> 106

<212> PRT

<213> Homo sapiens

<400> 28

Cys Cys Arg Gln Glu Phe Phe Val Asp Phe Arg Glu Ile Gly Trp His
 1 5 10 15

Asp Trp Ile Ile Gln Pro Glu Gly Tyr Ala Met Asn Phe Cys Ile Gly
 20 25 30

Gln Cys Pro Leu His Ile Ala Gly Met Pro Gly Ile Ala Ala Ser Phe
 35 40 45

His Thr Ala Val Leu Asn Leu Leu Lys Ala Asn Thr Ala Ala Gly Thr
 50 55 60

Thr Gly Gly Gly Ser Cys Cys Val Pro Thr Ala Arg Arg Pro Leu Ser
 65 70 75 80

Leu Leu Tyr Tyr Asp Arg Asp Ser Asn Ile Val Lys Thr Asp Ile Pro
 85 90 95

Asp Met Val Val Glu Ala Cys Gly Cys Ser
100 105

<210> 29

<211> 106

<212> PRT

<213> Homo sapiens

<400> 29

Cys Cys Lys Lys Gln Phe Phe Val Ser Phe Lys Asp Ile Gly Trp Asn
1 5 10 15

Asp Trp Ile Ile Ala Pro Ser Gly Tyr His Ala Asn Tyr Cys Glu Gly
20 25 30

Glu Cys Pro Ser His Ile Ala Gly Thr Ser Gly Ser Ser Leu Ser Phe
35 40 45

His Ser Thr Val Ile Asn His Tyr Arg Met Arg Gly His Ser Pro Phe
50 55 60

Ala Asn Leu Lys Ser Cys Cys Val Pro Thr Lys Leu Arg Pro Met Ser
65 70 75 80

Met Leu Tyr Tyr Asp Asp Gly Gln Asn Ile Ile Lys Lys Asp Ile Gln
85 90 95

Asn Met Ile Val Glu Glu Cys Gly Cys Ser
100 105

<210> 30

<211> 105

<212> PRT

<213> Homo sapiens

<400> 30

Cys Cys Arg Gln Gln Phe Phe Ile Asp Phe Arg Leu Ile Gly Trp Asn

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Asp Trp Ile Ile Ala Pro Thr Gly Tyr Tyr Gly Asn Tyr Cys Glu Gly	20	25	30
Ser Cys Pro Ala Tyr Leu Ala Gly Val Pro Gly Ser Ala Ser Ser Phe	35	40	45
His Thr Ala Val Val Asn Gln Tyr Arg Met Arg Gly Leu Asn Pro Gly	50	55	60
Thr Val Asn Ser Cys Cys Ile Pro Thr Lys Leu Ser Thr Met Ser Met	65	70	75
Leu Tyr Phe Asp Asp Glu Tyr Asn Ile Val Lys Arg Asp Val Pro Asn	85	90	95
Met Ile Val Glu Glu Cys Gly Cys Ala	100	105	

<210> 31

<211> 105

<212> PRT

<213> Homo sapiens

<400> 31

Cys His Arg Val Ala Leu Asn Ile Ser Phe Gln Glu Leu Gly Trp Glu	1	5	10	15
Arg Trp Ile Val Tyr Pro Pro Ser Phe Ile Phe His Tyr Cys His Gly	20	25	30	
Gly Cys Gly Leu His Ile Pro Pro Asn Leu Ser Leu Pro Val Pro Gly	35	40	45	
Ala Pro Pro Thr Pro Ala Gln Pro Tyr Ser Leu Leu Pro Gly Ala Gln	50	55	60	
Pro Cys Cys Ala Ala Leu Pro Gly Thr Met Arg Pro Leu His Val Arg	65	70	75	80

Thr Thr Ser Asp Gly Gly Tyr Ser Phe Lys Tyr Glu Thr Val Pro Asn
85 90 95

Leu Leu Thr Gln His Cys Ala Cys Ile
100 105

<210> 32

<211> 36

<212> DNA

<213> artificial sequence

<220>

<223> OD PCR amplification primer

<400> 32

atgaattccc atggacctgg gctggmakga mtggat

36

<210> 33

<211> 22

<212> DNA

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